CLAIMS

1. A catalyst for decomposing an organic halide(s) characterized in comprising a water-insoluble vanadyl sulfate (β-$VOSO_4$).

2. A catalyst as claimed in claim 1 wherein the catalyst further contain at least one oxide comprising an atom(s) selected from the group consisting of titanium, zirconium, niobium, molybdenum, tungsten and chromium; and at least one sulfate comprising an atom(s) selected from the group consisting of alkaline earth metals and lead.

3. A catalyst as claimed in claim 2 wherein 0 to 70 wt.% of the oxide(s), 0 to 70 wt.% of the sulfate(s) and 0.5 to 100 wt.% of the water-insoluble vanadyl sulfate are included.

sub A1 > 4. A catalyst as claimed in claim 2 or 3 wherein the oxide is titanium dioxide.

5. A catalyst as claimed in any one of claims 2 to 4 wherein the sulfate is barium sulfate.

6. A catalyst as claimed in any one of claims 1 to 5 wherein the organic halide(s) is at least one of chlorodioxins and polychlorodioxins; polychlorobiphenyls; chloroalkanes and polychloroalkanes; chloroalkenes and polychloroalkenes; bromodioxins and polybromodioxins; polybromobiphenyls; bromoalkanes and polybromoalkanes; and bromoalkenes and polybromoalkenes.

7. A catalyst as claimed in claim 6 wherein the organic halide(s) is at least one of chlorodioxins and

polychlorodioxins, polychlorobiphenyls, chlorobenzene, dichlorobenzene, chlorotoluene, chlorophenol, chloromethane, chloroethylene, bromodioxins and polybromodioxins, polybromobiphenyls, bromobenzene, dibromobenzene, bromotoluene, bromophenol, polybromobiphenyl ether, bromomethane and bromoethylene.

SUB A2 >

8. A method of decomposing organic halide(s) in a gas characterized by contacting a gas containing an organic halide(s) with the catalyst described in any one of claims 1 to 5 to decompose the organic halide(s).

9. A method of decomposing as claimed in claim 8 wherein the contact between the organic halide(s) and the catalyst is carried out at a temperature from 140 to 300 °C.

SUB A3 >

10. A method of decomposing as claimed in any one of claims 8 and 9 wherein the organic halide(s) is at least one of chlorodioxins and polychlorodioxins; polychlorobiphenyls; chloroalkanes and polychloroalkanes; chloroalkenes and polychloroalkenes; bromodioxins and polybromodioxins; polybromobiphenyls; bromoalkanes and polybromoalkanes; and bromoalkenes and polybromoalkenes.

11. A method of decomposing as claimed in claim 10 wherein the organic halide(s) is at least one of chlorodioxins and polychlorodioxins, polychlorobiphenyls, chlorobenzene, dichlorobenzene, chlorotoluene, chlorophenol, chloromethane, chloroethylene, bromodioxins and polybromodioxins, polybromobiphenyls, bromobenzene, dibromobenzene, bromotoluene, bromophenol, polybromobiphenyl ether, bromomethane and bromoethylene.

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